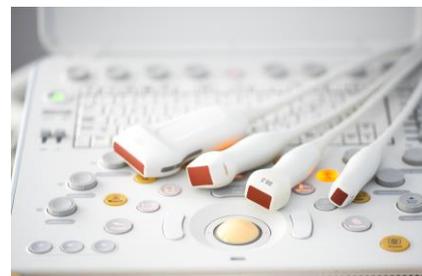


## Advice Statement 006/17

September 2017

**In patients with suspected rheumatoid arthritis, does the addition of musculoskeletal ultrasound increase the ability of rheumatologists to confirm or rule out a diagnosis of rheumatoid arthritis at an earlier stage compared to conventional diagnostic assessment alone?**



This advice has been produced following completion of evidence note 69 by Healthcare Improvement Scotland, in response to an enquiry from the Scottish Society for Rheumatology

### Background

Rheumatoid arthritis is a chronic autoimmune condition causing widespread inflammation, particularly at the joints. This inflammation leads to chronic pain, stiffness and joint damage. Rheumatoid arthritis can develop at any age with peak incidence in people aged 40 to 60. With an increasing older population in Scotland the prevalence of rheumatoid arthritis is expected to increase.

Early initiation of treatment with disease modifying anti-rheumatic drugs (DMARDs) - in the first weeks or months after symptoms develop - can prevent joint damage, improve long-term physical function and increase the likelihood of achieving clinical remission.

Conventionally, diagnostic assessment for people with suspected rheumatoid arthritis has involved a clinical examination, laboratory tests and x-ray of the affected joints. Musculoskeletal ultrasound (MSUS) of the affected joints has been proposed as an additional aid to early diagnosis of people with suspected rheumatoid arthritis.

### Clinical effectiveness

- A systematic review incorporating six small studies concluded that adding MSUS to clinical examination and laboratory testing increased detection of joint inflammation, was more likely to predict development of rheumatoid arthritis, and improved early clinical diagnosis.
- A prospective diagnostic cohort study in 103 patients with suspected rheumatoid arthritis demonstrated significant improvements in rheumatologists' certainty in their diagnosis following addition of MSUS to clinical examination and laboratory tests.
  - Patients with a likelihood of rheumatoid arthritis <20% or ≥80% were classed as having the highest diagnostic certainty (highly unlikely or highly likely to have rheumatoid arthritis respectively).
  - The proportion of patients classed as having the highest diagnostic certainty increased from 31% before to 61% after MSUS ( $p < 0.001$ ).
- A cohort study in 136 patients with non-specific musculoskeletal symptoms and positive anti-CCP antibody tests reported that ultrasound-detected abnormalities predicted progression to inflammatory arthritis.

- Power Doppler ultrasound score  $\geq 2$  was associated with increased risk of developing inflammatory arthritis: hazard ratio (HR) 3.7, 95% confidence interval (CI) 2.0 to 6.9,  $p < 0.001$ .
- Ultrasound-detected joint erosions were associated with increased risk of developing inflammatory arthritis: HR 2.9, 95% CI 1.7 to 5.1,  $p < 0.001$ .
- Grey-scale ultrasound scores were not significantly associated with increased risk of developing inflammatory arthritis.

### **Safety**

- No adverse events relating to the use of MSUS in patients with suspected rheumatoid arthritis were identified.

### **Patient and social aspects**

- An MSUS clinic was piloted for six months in Inverness. Postal survey responses were received from 19/43 (44%) patients who attended the clinic.
  - On a scale of 0 to 10, average patient satisfaction scores for the MSUS clinic were 9.5 or higher for explanations of the procedure and findings, lack of discomfort during the procedure, improved understanding of their condition and length of appointment.

### **Cost effectiveness**

- No cost-effectiveness evidence was identified relating to MSUS in people with suspected rheumatoid arthritis.

### **Organisational issues**

- MSUS is currently available in all health boards in NHS Scotland, although there is substantial variation in availability between rheumatology units.
- Ultrasound equipment costs are highly variable (£5,000 to £50,000) depending on suppliers, portability and model specification.
- Adding MSUS to early rheumatoid arthritis diagnosis would require training staff in the use and interpretation of ultrasound images in clinic settings.

### **Conclusion**

- There is evidence from a systematic review of a small number of studies to support the addition of MSUS to clinical assessment and laboratory testing to diagnose rheumatoid arthritis at an earlier stage of the disease. Use of ultrasound increased detection of joint inflammation and was more likely to correctly predict progression to inflammatory arthritis in patients with suspected rheumatoid arthritis.
- No evidence was identified on the cost-effectiveness of MSUS in people with suspected rheumatoid arthritis.

### **Further research**

- Cost-effectiveness analyses are required to evaluate use of MSUS for the early diagnosis of people with suspected rheumatoid arthritis.
- Published, peer reviewed observational or randomised studies comparing diagnostic assessment using both clinical and ultrasound assessment versus clinical diagnostic assessment alone are required. Studies should report the time from first clinic visit to diagnosis or first clinic visit to treatment initiation.

## Advice context:

*The status of SHTG Advice Statements is 'required to consider'.*

*No part of this advice may be used without the whole of the advice being quoted in full. This advice represents the view of the SHTG at the date noted.*

*It is provided to inform NHS boards in Scotland when determining the place of health technologies for local use. The content of this Advice Statement was based upon the evidence and factors available at the time of publication. An international evidence base is reviewed and thus its generalisability to NHSScotland should be considered by those using this advice to plan services. It is acknowledged that the evidence constitutes only one of the sources needed for decision making and planning in NHSScotland. Readers are asked to consider that new trials and technologies may have emerged since first publication and the evidence presented may no longer be current. SHTG Advice Statements are considered for review on a 2-yearly basis. The evidence will be updated if requested by the clinical community, dependent on new published reports. This advice does not override the individual responsibility of health professionals to make decisions in the exercise of their clinical judgment in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.*

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**Chair**  
**Scottish Health Technologies Group**



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